

A Classical Model for the Extended Electron I

Dietrich Lortz*

Max-Planck-Institut für Plasmaphysik, D-85748 Garching

* Retired.

Reprint requests to Prof. D. L.; E-mail:xxl@ipp-garching.mpg.de

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In order to avoid divergence of its self-energy the free electron at rest is described as a relativistic continuum of finite extent. It has the form of an axisymmetric torus of finite aspect ratio, which rigidly rotates around its axis of symmetry with superluminal speed ($v > c$). It is shown that there is a class of stationary solutions of the free-boundary value problem. The parameter dependence of these solutions is related to experimental data.

Key words: Classical Field Theory; Relativistic Fluid Dynamics.